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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,052	01/28/2004	Alain Yang	D0932-00404	2309
8933	7590	07/27/2006		EXAMINER
DUANE MORRIS, LLP IP DEPARTMENT 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103-4196			GREENE, JASON M	
			ART UNIT	PAPER NUMBER
			1724	

DATE MAILED: 07/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/766,052	YANG, ALAIN	
	Examiner Jason M. Greene	Art Unit 1724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 15 May 2006.

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-15, 17-41, 43-49, 70 and 71 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-15, 17-41, 43-49, 70 and 71 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 28 January 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_\_.

**DETAILED ACTION**

***Response to Amendment***

1. Applicant's confirmation of the election without traverse of Group I, claims 1-49 in the reply filed on 15 May 2006 is acknowledged.

***Claim Objections***

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not). Specifically, newly introduced claims 60 and 61 should have been numbered as claims 70 and 71, respectively, since claims 1-69 were already presented. Additionally, the Examiner has assumed that Applicants intended to cancel original claims 60-69 eventhough only claims 50-59 were cancelled in the listing of claims presented on 15 May 2006.

Misnumbered claims 60 and 61 have been renumbered as claims 70 and 71, respectively.

***Drawings***

3. The drawings are again objected to under 37 CFR 1.84(u)(2) because the view number for Fig. 5 is not larger than the numbers used for reference characters.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Response to Arguments***

4. Applicant's arguments filed 15 May 2006 have been fully considered but they are not persuasive.

With regard to Applicants' arguments regarding the Miyake et al. reference, the Examiner contends that Miyake et al. does teach the basis weight variance being within the range claimed by Applicants. Specifically, even though Miyake et al. does not explicitly recite a numerical range, the reference teaches the filtration media being "uniform in the basis weight" (col. 3, lines 39-40). The phrase "uniform in the basis weight" suggests to one of ordinary skill in the art that the variance of the basis weight of the filtration media should be approximately zero, or at least as close to zero as obtainable using customary manufacturing equipment. Clearly, one of ordinary skill in the art would recognize that a teaching of a "uniform basis weight" would include a variance within the range claimed by Applicants.

With regard to Applicants' arguments regarding the Yao et al. reference, the Examiner contends that the reference teaches the plastic-containing bonding fibers and the glass fibers being uniformly blended together. The Examiner agrees with Applicants that Yao et al. does teach the two types of fibers being oriented in substantially the same direction as part of the carding process taught in paragraph [0081]. However, the fact that the fibers are arranged in a parallel configuration does not exclude the fibers from being uniformly blended together. In fact, Yao goes on in paragraph [0081] to explicitly recite that the carding process "blends the binder and functional fibers, separates every fiber individually from the other fibers, arranges the fibers to a high degree of parallelization, and delivers the fibers to the outfeed in a consistently even

manner". Clearly, the carding process taught by Yao et al. includes uniformly blending the two types of fibers.

***Claim Rejections - 35 USC § 103***

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1, 5-7, 10, 14-15, 18, 19, 24, 31-33, 36, 40, 41, 44, 49, 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta in view of Miyake et al. (US Patent 4,548,628).

With regard to claims 1, 5-7, 10, 18, 24, 31-33, 36 and 44, Perrotta discloses a glass fiber air filtration media comprising glass fibers and mono-component thermoplastic polymer (polyethylene) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbindered) glass fibers, and wherein the glass fibers and the bonding fibers have an average fiber diameter of 0.1  $\mu\text{m}$  in col. 2, line 57 to col. 6, line 38.

Perrotta does not explicitly disclose the variation in the gram weight of the air filtration media being  $\pm 5\%$  or less.

Miyake et al. teaches forming air filtration media with a uniform basis weight (gram weight) in column 3, lines 33-41.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the uniform gram weight of Miyake et al. into the air filtration media of Perrotta to provide an air filtration media having consistent filtration performance across its major sides, as is well known in the art.

With regard to claims 14, 15, 40 and 41, Perrotta discloses the air filtration media comprising 10 wt% bonding fibers in col. 3, lines 38-45.

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

With regards to claims 70 and 71, Perrotta does not teach the specific basis weight of the filtration media.

Miyake et al. teaches air filtration media having a basis weight of 30 to 500 g/m<sup>2</sup> in col. 5, line 66 to col. 6, line 10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the basis weight of Miyake et al. into the air filtration media of Perrotta to allow the media to have a suitable collection efficiency and pressure drop for a desired application, as is well known in the art.

7. Claims 1, 5, 8-15, 17-21, 23, 24, 31, 34-41, 43-46, 48, 49, 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. in view of Miyake et al. (US Patent 4,548,628).

With regard to claims 1, 5, 17, 18, 20, 21, 24, 31 and 43-46, Yao et al. discloses a glass fiber air filtration media comprising glass fibers and mono-component or bi-component thermoplastic polymer (polyethylene or polypropylene/polyethylene terephthalate) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbindered) glass fibers, and wherein the bi-component thermoplastic polymer fibers comprise a thermoplastic core material and a thermoplastic sheath material having a melting temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms bonds at the points of intersection between the glass fibers and the plastic-containing bonding fibers in paragraphs [0009] to [0085].

Yao et al. does not explicitly disclose the variation in the gram weight of the air filtration media being  $\pm 5\%$  or less.

Miyake et al. teaches forming air filtration media with a uniform basis weight (gram weight) in column 3, lines 33-41.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the uniform gram weight of Miyake et al. into the air

filtration media Yao et al. to provide an air filtration media having consistent filtration performance across its major sides, as is well known in the art.

With regard to claims 8-13 and 34-39, Yao et al. discloses the functional (e.g. glass) fibers having an average length of 1.5  $\mu\text{m}$  and the bonding fibers having an average length of 1 inch and a denier of about 0.5 to about 10 (corresponding to a diameter of approximately 3 to 75  $\mu\text{m}$  depending on the density of the specific polymer) in paragraphs [0055] and [0087].

With regard to claims 14, 15, 40 and 41, Yao et al. discloses the plastic-containing bonding fibers being between 10 to 40 wt. % of the air filtration media in paragraph [0080].

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

With regard to claims 23 and 48, Yao et al. discloses the core material and the sheath material being the same thermoplastic polymer (nylon) but of different formulation (nylon 6 and nylon 6,6) in Table 1.

With regards to claims 70 and 71, Yao et al. does not teach the specific basis weight of the filtration media.

Miyake et al. teaches air filtration media having a basis weight of 30 to 500 g/m<sup>2</sup> in col. 5, line 66 to col. 6, line 10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the basis weight of Miyake et al. into the air filtration media of Yao et al. to allow the media to have a suitable collection efficiency and pressure drop for a desired application, as is well known in the art.

8. Claims 1, 5-14, 17-21, 24-28, 31-40, 43, 45, 46, 49, 70 and 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Powers et al. in view of Miyake et al. (US Patent 4,548,628).

With regard to claims 1, 5, 17, 18, 20, 21, 24, 31-39, 43, 45 and 46, Powers et al. discloses a glass fiber air filtration media comprising glass fibers (the microfibers) and bi-component thermoplastic polymer (polyester/linear low density polyethylene) plastic-containing bonding fibers uniformly blended together with the glass fibers and bonding at least a portion of the glass fibers together by forming bonds at points of intersection between the glass fibers and the plastic-containing bonding fibers, wherein the glass fibers are loose-fill (unbindered) glass fibers, and wherein the bi-component thermoplastic polymer fibers comprise a thermoplastic core material and a thermoplastic sheath material having a melting temperature that is lower than the melting point temperature of the core material, wherein the sheath material forms bonds at the points

of intersection between the glass fibers and the plastic-containing bonding fibers in column 2, line 1 to column 5, line 3.

Powers et al. does not explicitly disclose the variation in the gram weight of the air filtration media being  $\pm 5\%$  or less.

Miyake et al. teaches forming air filtration media with a uniform basis weight (gram weight) in column 3, lines 33-41.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the uniform gram weight of Miyake et al. into the air filtration media of Powers et al. to provide an air filtration media having consistent filtration performance across its major sides, as is well known in the art.

With regard to claims 6-13 and 32-39, Powers et al. discloses the glass fibers having an average diameter of 1 micron and an average length of 650  $\mu\text{m}$  and the bonding fibers having an average diameter of 5 to 30 microns (including 15 microns) and an average length of 20 mm (0.79 inches) in col. 3, line 63 to col. 4, line 9 and col. 7, lines 39-57.

With regard to claims 14 and 40, Powers et al. discloses the plastic-containing bonding fibers being between 50 wt. % of the air filtration media in col. 4, lines 56-65.

With regard to claims 19 and 49, since the materials used to form the air filtration media are formaldehyde-free, the air filtration media is inherently formaldehyde-free.

With regard to claims 25-28, Powers et al. discloses the air filter being a bag filter, a cube filter, a pocket filter or a panel filter in col.

With regards to claims 70 and 71, Perrotta does not teach the specific basis weight of the filtration media.

Powers et al. teaches air filtration media having a basis weight of 30 to 500 g/m<sup>2</sup> in col. 5, line 66 to col. 6, line 10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the basis weight of Miyake et al. into the air filtration media of Powers et al. to allow the media to have a suitable collection efficiency and pressure drop for a desired application, as is well known in the art.

9. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Miyake et al., and further in view of Cusick et al. (US Patent 5,800,586).

Perrotta, Yao et al., Powers et al. and Miyake et al. do not disclose a thermoplastic non-woven facing layer being bonded to one of the two major sides of the air filtration media.

Cusick discloses a glass air filtration media (22) having first and second major sides, a thermoplastic non-woven facing layer comprising a polypropylene (see column

7, lines 50-54) polymer bonded to one of the two major sides of the air filtration media in col. 1, line 43 to col. 8, line 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the facing layer of Cusick et al. into the air filtration media of Perrotta, Yao et al. or Powers et al. to facilitate the handling of the air filtration media, protect the air filtration media from abrasion, increase the integrity of the air filtration media, and minimize fiber loss, as suggested by Cusick et al. in column 3, lines 54-57 and column 7, lines 37-47.

10. Claims 4 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Miyake et al., and further in view of Sircar (US Patent 6,358,871 B1).

Perrotta, Yao et al., Powers et al. and Miyake et al. do not explicitly disclose the glass fibers being rotary glass fibers.

Sircar teaches using rotary glass fibers to form air filtration media in column 2, lines 28-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the rotary forming of the glass fibers of Sircar into the air filtration media of Perrotta, Yao et al. or Powers et al. to allow the glass fibers to be formed having a fine-diameter using a conventional process, as suggested by Sircar in column 2, lines 28-64.

11. Claims 22 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yao et al. or Powers et al. in view of Miyake et al., and further in view of Mueller (US Patent 4,783,355).

Yao et al. and Powers et al. teach the sheath material being a thermoplastic polymer but do not teach the core material being a mineral.

Mueller teaches a similar bi-component fiber wherein the sheath material is a thermoplastic polymer and the core is a mineral (glass) in col. 2, lines 5-26.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the glass core of Mueller into the bi-component fibers of Yao et al. or Powers et al. to allow the media to be recycled more readily by reducing the number of different materials, as is well known in the art.

Furthermore, it would have been obvious to substitute the glass core of Mueller for the thermoplastic polymer core of Yao et al. and Powers et al. in that such are alternate materials in the art for providing a heat resistant, high melting point core of a bi-component fiber.

12. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Perrotta, Yao et al. or Powers et al. in view of Miyake et al. and Cusick et al. (US Patent 5,800,586) and Scanlon et al.

Perrotta, Yao et al., Powers et al. and Miyake et al. do not disclose a thermoplastic non-woven facing layer being bonded to one of the two major sides of the air filtration media.

Cusick discloses a glass air filtration media (22) having first and second major sides, a thermoplastic non-woven facing layer comprising a polypropylene (see column 7, lines 50-54) polymer bonded to one of the two major sides of the air filtration media in col. 1, line 43 to col. 8, line 14.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the facing layer of Cusick et al. into the air filtration media of Perrotta, Yao et al. or Powers et al. to facilitate the handling of the air filtration media, protect the air filtration media from abrasion, increase the integrity of the air filtration media, and minimize fiber loss, as suggested by Cusick et al. in column 3, lines 54-57 and column 7, lines 37-47.

Cusick et al. does not disclose the facing layer being polyethylene.

Scanlon et al. discloses an air filter media (20) having a polyethylene facing layer in col. 4, lines 11-20.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the polyethylene facing material for the polypropylene material of Cusick et al. to reduce the number of different materials in the filter media when the sheath material is polyethylene to allow the filter media to be recycled more readily.

Furthermore, it would have been obvious to substitute the polyethylene of Scanlon et al. for the polypropylene of Cusick et al in that such are alternate materials in the art for providing a facing layer for an air filter media.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

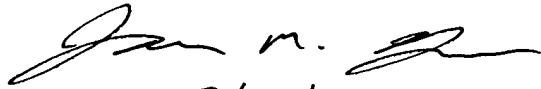
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Greene whose telephone number is (571) 272-1157. The examiner can normally be reached on Monday - Friday (9:00 AM to 5:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on (571) 272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jason M. Greene  
Primary Examiner  
Art Unit 1724

  
7/23/06

jmg  
July 23, 2006